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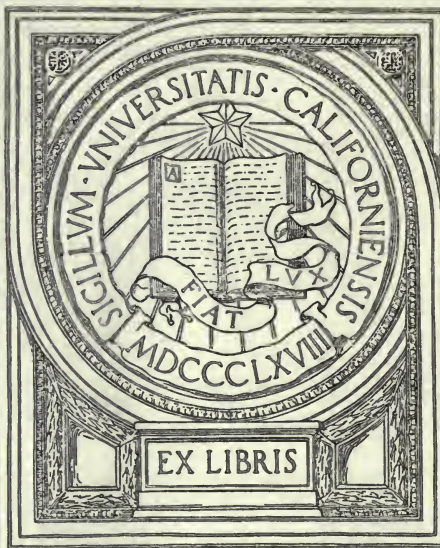


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THE JOURNAL

OF THE AMERICAN MEDICAL ASSOCIATION

PUBLISHED WEEKLY

1912

Vol. 45, No. 1, January 1, 1912

OFFICE OF PUBLICATION

535 N. Dearborn St., Chicago, Ill.

Subscription Price

Five Dollars Per Annum in Advance



Entered as Second-Class Matter, June 26, 1907
Postoffice at Chicago, Ill., under No. 100,000
Acceptance for mailing at special rate of postage provided for in Act of October 3, 1917, authorized on July 1, 1918

Published by the American Medical Association

Chicago, Ill.

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BULLETIN

OF

THE UNIVERSITY OF TEXAS

FOUR TIMES A MONTH

NO. 188

EXTENSION SERIES, NO 17

JUNF 22, 1911

NOTES ON SCHOOL OBSERVATION THE PHYSICAL NATURE OF THE CHILD

BY

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PUBLISHED BY THE UNIVERSITY OF TEXAS

AUSTIN, TEXAS

Entered as second class mail matter at the postoffice at Austin, Texas

AUSTIN PRINTING COMPANY
AUSTIN, TEXAS
1911

EXCHANGE

Cultivated mind is the guardian genius of democracy. . . . It is the only dictator that freemen acknowledge and the only security that freemen desire.

President Mirabeau B. Lamar.

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NOTES ON SCHOOL OBSERVATION

This Bulletin forms a part of the introduction to a course in School Observation which the author is giving in The University of Texas. The course may also be taken through the Extension Department of the University by principals, supervisors, and teachers who wish to carry out observations in connection with their school work. All reports and answers to the questions will be evaluated and checked by the instructor. Similar bulletins will be issued on Instinct and Play, Fatigue, Individual Differences, Discipline, and the Recitation. A series of bulletins on Practice Teaching will be published later. All of these bulletins will aim to deal with fundamental problems in an elementary manner. Teachers who wish to take this work should register in the Department of Extension.

BIRD T. BALDWIN.

Austin, Texas, 1911.

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THE PHYSICAL NATURE OF THE CHILD IN HIS SCHOOL ENVIRONMENT.

It is now conceded by all educators that it is very important for teachers to have a rather complete knowledge of the physical growth of school children, but the important practical problem is, "What shall the teacher observe and how shall he make the observations sufficiently definite and accurate to be of help to both teacher and pupils?" Let us first select the phases of the physical nature of the child which may be observed by any teacher who is willing to use a little perseverance and time. They are, growth in height and weight; chest girth; breathing capacity; head girth; cephalic index; symmetry of body; posture; the teeth; enlarged tonsils; adenoids; nasal obstructions; nutrition and sense defects. With a few exceptions observations may be made in a general way without personal inspection and examination, but there is no reason why a teacher should not make personal individual inspection of every child in his room and construct a record card for the sixteen headings outlined in this bulletin.

The *observational method* of studying children which is here recommended is one that may be made just as scientific as the observer's training and opportunities permit. It is a method which takes the physiology into the schoolroom and applies it to practical everyday problems; the directions offered are those which can be followed by the average trained teacher. The advantages of such a method are at once apparent because the material is always at hand, observations of a very practical nature may be undertaken, and the teacher is led to adjust her instruction to the individual needs of pupils. The chief difficulty involved in the method is that teachers at first find it difficult to observe their children and teach them at the same time, but principals, teachers and student observers, who have carefully undertaken the work with prepared outlines, claim they soon become very accurate observers and that there is no interference with their actual work of instruction. They learn to observe the children as they pass to and from classes, during the study period, during the intermission or rest pauses, or during special periods in the day set aside for observing, measuring and testing. As a result teachers are soon led to see for themselves that children differ greatly from each other and from adults, and, therefore, different standards and methods are applicable. Attention is drawn to the physical and mental development and directly to the learning process. In short, the teacher is brought face to face with the problem of *how* children learn, which is the center of reference for all good teaching.

Educational psychologists have necessarily been interested in the relationship of mind and body, but it is only recently that they have extended their study beyond the senses and noted how physical abnormalities and defects condition mental development. One is also surprised to find how little the average teacher and student observe in regard to the physical nature of the child. Principals and teachers

who are college graduates with experience are found to be unable to measure children correctly, note the common signs of abnormalities or test for the acuity of the senses.

The observing teachers and students will wish to supplement this general outline with some further information on the work of the medical inspector or physical director and, also, to consult freely the classified list of appended references. The main purpose is to help teachers to detect gross deformities and pronounced physical defects, to appreciate the educational significance of the relation of the body to the mind and to develop the desire to appeal to expert authority when conditions seem to require it. In no case should the teacher assume the rôle of the physician or the expert.

This syllabus, as outlined above, is designed for students attending class exercises in training schools and universities or for teachers actively engaged in school work. The observations are divided into two groups: (A) those which are made by means of personal inspection, examination, and measurement, and (B) some general observations to be made in the school room or in the laboratory. Either group of observations may be pursued independently, but the one naturally supplements the other. No elaborate apparatus is necessary; the aim has been to keep the scope of the work within the experience of a trained teacher.

The interrogative form of suggestion has been used in connection with each topic in order to arouse definite, specific questions in the mind of the observer. In nearly all cases a few answers to these questions have been given.

It is not expected any student or teacher will be able to answer all the questions or to include all the observations after one or two visits. Some of the questions require consecutive observations from day to day, and a few refer to exceptional conditions. All are practical and each has been based on active schoolroom conditions.

Careful notes should be recorded in a permanent note book in such a manner that they will be self-explanatory and accessible for future reference. The following order is suggested: (a) the name of the observer; (b) the name of the school; (c) the grade; (d) the subject; (e) the size of the class; (f) the time of day; (g) the date; (h) a brief statement of the purpose of the observations, and a careful written summary of the results.

Record blanks or cards similar to the one given on the last page of this Bulletin should be made so that consecutive records can be kept for the entire school life of each individual; these should be kept within easy access of the teacher's desk for ready reference.

I. HEIGHT. II. WEIGHT.

Height and weight are among the best indices of growth and nutrition. Observations lead us to conclude children vary according to race, sex, heredity, and stage of development. The latter, which is of direct concern to the teacher, varies in accordance with facts which may be observed. The growth is most rapid during the first year of childhood, there is a slight acceleration at seven and a

decided increase from twelve to eighteen, with marked sex differences at adolescence, the increase appearing with girls earlier than with boys, and the rapid growth and advent of maturity appearing first with tall boys and tall girls. (For details see table and charts on pages 8, 10, and 11. The averages here are a trifle above those found by nearly all other investigators. The children were nude in all cases.)

The most rapid growth period for boys who are taller than the average is from 13 to 14 years of age, and for those below the average 14 to 15 years of age; for girls above the average the most rapid growth is between $11\frac{1}{2}$ and $12\frac{1}{2}$ years of age; for those below, between $12\frac{1}{2}$ and $13\frac{1}{2}$ years of age. These periods of adolescence are the periods of greatest range of differences in height for both boys and girls. The results of my investigations show marked individual differences, and prove that a composite curve of average measurements from different groups of individuals cannot give an accurate conception of growth, since the characteristics of different types of the same chronological age, but different physiological ages, tend to obliterate each other. (These conclusions, Chart I and Figures II and III are from a preliminary report of an investigation which has been extended and will be published by the United States Bureau of Education, Washington, D. C.)

It is more difficult for teachers to get the weight of children than to get their height, since scales are not often available. The weights of children fluctuate a great deal more than the heights, but in general the curves of weight follow the curves of height.

The lower forms of mentally deficient children, such as idiots, imbeciles and feeble-minded, are larger than normal children at birth, but usually fall below the normal children during the school period.

TABLE I.

HEIGHT AND AGE DISTRIBUTION AND WEIGHT AND AGE DISTRIBUTION, UNIVERSITY OF CHICAGO ELEMENTARY AND HIGH SCHOOL AND FRANCIS W. PARKER SCHOOL CHILDREN.

	Median height in centimeters.		Median weight in pounds.	
	Boys.	Girls.	Boys.	Girls.
6	116	114	48	46
6 ½	119	118	52	47
7	121	121	52	48
7 ½	125	124	56	49
8	128	125	58	52
8 ½	131	127	61	54
9	132	130	59	59
9 ½	137	131	63	60
10	137	136	68	65
10 ½	139	138	69	66
11	138	141	72	67
11 ½	142	144	73	73
12	146	146	77	76
12 ½	146	149	78	84
13	150	153	87	96
13 ½	152	155	88	96
14	155	157	93	103
14 ½	159	158	103	104
15	164	159	106	112
15 ½	165	159	109	112
16	167	160	113	109
16 ½	167	161	115	113
17	170	160	125	114
17 ½	171	163	128	116
Total number of cases.....	1587	2372	1464	2101
Total number of individuals.....	813	903	580	843



Fig. I—Stadiometer.

A. INDIVIDUAL OBSERVATION AND INSPECTION.

In order to have a basis for intelligent comparison every teacher should accurately measure and weigh a few children. The height measurement may be taken with a measuring rod or tape if no *stadiometer* is accessible, deductions being made for the heels of the shoes. The person measuring should be careful to see that the child is standing straight, with heels together, and heels, upper part of the back and head against the measuring rod, and in a natural position. Measurements will vary a little at different times of day and with different measurers; try to keep a standard method of procedure as far as possible. The measurements may be taken either in the English or French system of units, but the latter is more easily used in making comparative studies.

If no scales are available the teacher may as a last resource ask the child its weight; this, as a rule, is not a reliable source of information. Deductions should be made for clothing if the child is weighed.

All records should be compared with those of the medical inspector or physical director and with the norms in the chart on page 8.

1. Give measurements for height. For weight. Compare in tabulated form with the norms on the preceding page and note whether the child's growth is arrested or above normal. In making such comparisons keep in mind such modifying factors as race, heredity, environmental conditions, etc.

Make a careful table showing your results.

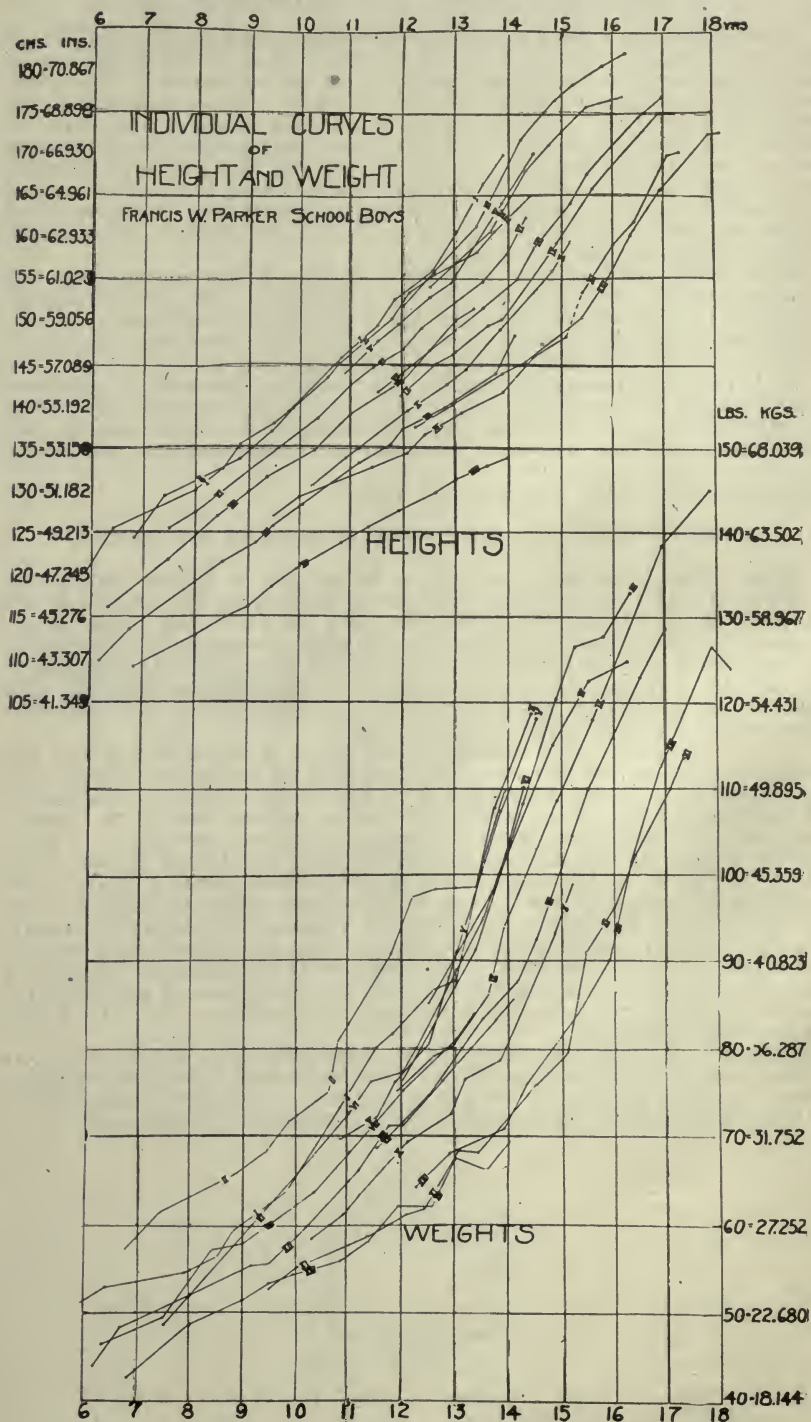
CURVES OF INDIVIDUAL GROWTH IN HEIGHT AND WEIGHT.

These charts represent graphically the growth in height and weight of 14 boys and 11 girls. The charts were plotted on large white sheets of linen paper, six feet by three feet, and were reduced, when photographed, to the size printed in this monograph. Originally 10 centimeters in the vertical scale equalled 10 centimeters in height, and 10 centimeters horizontally equalled 12 months in time; 10 centimeters vertically also equalled 10 pounds in weight. The Roman numbers at the beginning and end of the curves refer to individuals.

There are many characteristics to be noted in these charts that are common to the growth of children in general, i. e., the advent of pubescent acceleration is directly correlated with the initial height at this period. There is a parallelism in growth which is so uniform that if the relative position of a child is known in reference to a given median at a given age it is possible to prophesy quite accurately the height to which the child will grow at any age after this and before eighteen years. The majority of normal children grow in accordance with the general trend of these curves; there are some children whose growth is more irregular than these charts would seem to indicate; there are others whose growth rates are more uniform with no acceleration at adolescence. There is a moderate decrease in increments after six or seven years of age, until the pubescent stage which varies in advent in accordance with the height of the individual.

Follow each curve for height and see how individuals differ. Compare the growth in height and weight for each individual. Compare boys and girls. Number 2 in Fig. II is a tall, heavy boy. Number 1 in Fig. III is a tall girl who weighed 150 pounds when 12 years three months old.

Growth Curves in Height and Weight for Boys.



Growth Curves in Height and Weight for Girls.

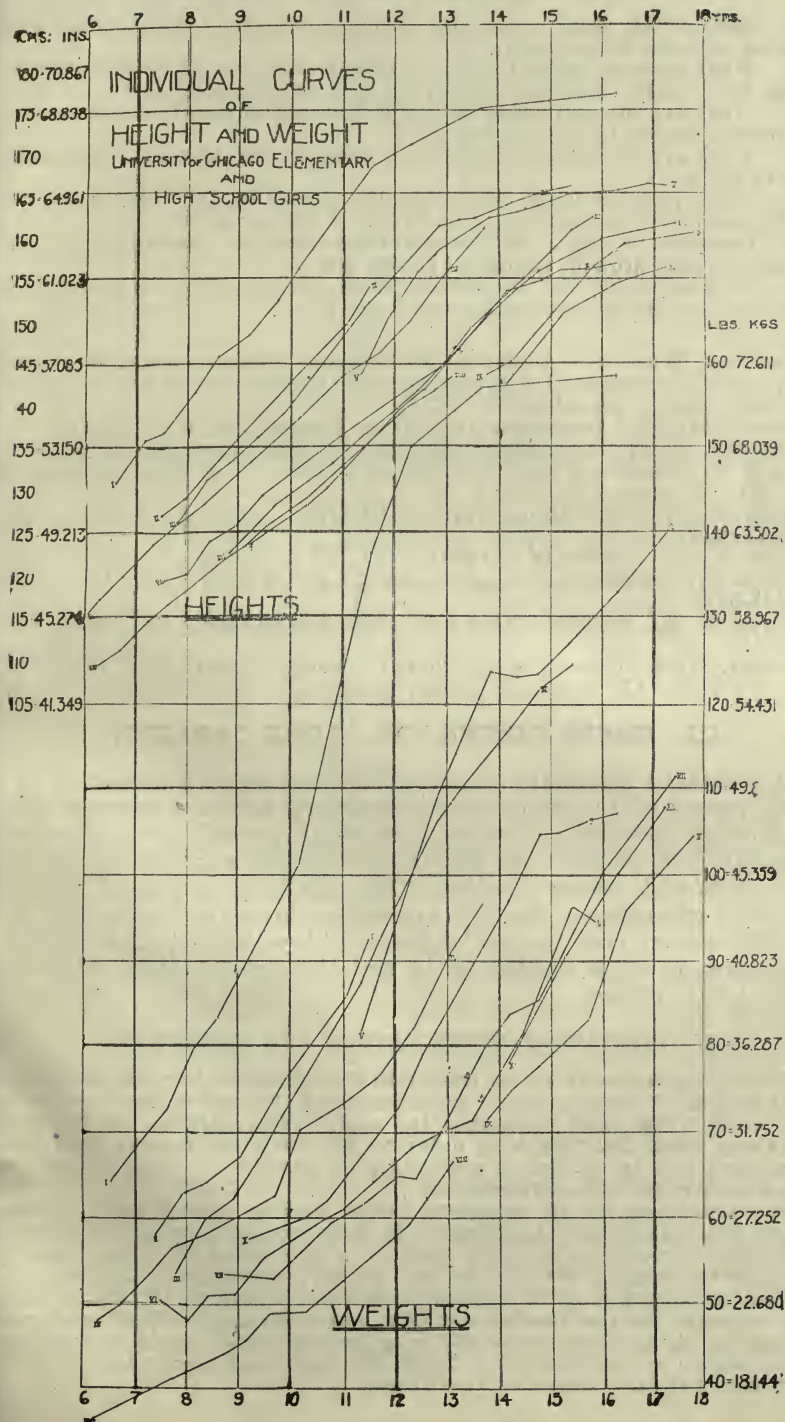


Fig. III.

B. GENERAL OBSERVATIONS.

1. Observe for cases of normal development, over development, and arrested physical development.
2. What physical defects have interfered with normal development in height and weight—lameness, blindness, lack of nutrition, etc.?
3. What are the noticeable effects of arrested physical development—under size, not well proportioned, etc.?
4. What are the probable causes of arrested development—accidents, impure air, etc.?
5. What possible helps lie within the power of the teacher—systematic exercise, directions for right habits of living, etc.?
6. Describe in detail the characteristic changes observable at adolescence—rapid growth, emotional stress, etc.
7. In what way does the development of girls differ at adolescence from boys—rapid growth appears first, etc.?

References:

- Hastings, Wm. W. A Manual of Physical Measurements, Boys and Girls, with Anthropometric Tables for each height of each age, from five to twenty years. Macmillan Co., N. Y.
- Searer, Jay W. Anthropometry. O. A. Dorman Co., New Haven.
- Baldwin, B. T. Individual Differences in the Correlation of Physical Growth of Elementary and High School Pupils. J. of Ed. Psychol., II: 150-151.
- Boas, F. W. Growth of Toronto Children. Rep. U. S. Com. Ed., 1896-7:1541.
- Boas, F. W. Growth of Children. Sci., N. S., V:570.
- Burk, F. Growth of Children in Height and Weight. Am. Jour. Psy., IX:253-326.
- Bryan, E. B. Nascent Stages and Their Significance. Ped. Sem., VII: 357-398.
- Porter, W. S. Growth of St. Louis Children. Trans. Acad. Sci. of St. Louis, VI, No. 12.

III. CHEST GIRTHS. IV. LUNG CAPACITY.

It is highly important that teachers pay more attention to the development of the pupil's lung capacity, not only because there is a close correlation between physical growth and breathing capacity, but because the breathing capacity may be greatly increased through proper exercise. This may be accomplished through out-door gymnastics, through systematic breathing exercises, and through correct posture. At adolescence, boys begin to have a strikingly greater capacity than girls, and the girls need special attention at this period.

A. INDIVIDUAL OBSERVATION AND INSPECTION.

These measurements are so important that they are frequently referred to as indices of vital capacity. It is important the tape be kept uniformly taut around the chest just below the arms. The child should be asked to take a deep, full breath in order to get the measurement for forced inhalation and to exhale as completely as possible in order to get the measurement for forced exhalation.

The lung capacity of girls falls below boys at twelve years of age; future development may be impaired by dress, posture, etc. Lung capacity is tested by means of a *spirometer*. If a spirometer is not at hand, a comparative method may be devised which may suggest, together with the measurements of chest expansion, unusual conditions of lung capacity. For example, try the blowing out of a wax taper or the blowing over of a light block at distances which have become standardized through experiments on normal children. These are crude and inaccurate tests, but they may help to suggest unusual cases.

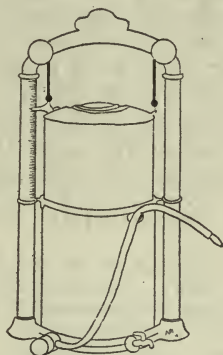


Fig. IV. Spirometer.

1. Make a table of the measurements for each child measured.
2. Do these measurements indicate shallow respiration or lack of lung capacity?
3. Compare the measurements of different children at all ages and give your conclusions, taking into consideration the child's experience in taking deep breaths, the teacher's experience in measuring, and the deductions for clothing.
4. Does the ability to take a deep breath and hold it vary with different children? Why—lack of voluntary control, inexperience, etc.?
5. Is there any relation between extremes in chest girth and habits of exercise—the athlete, “book worm,” etc.?

B. GENERAL OBSERVATIONS.

1. Enumerate the varieties of chests noted—flat chest, pigeon breast, etc.
2. What natural positions of children in school tend to increase chest capacity—sitting erect, correct standing, etc.?
3. How does sitting too close to a desk affect chest development?
4. What efforts are made in schools to develop the chest—deep breathing, calisthenics, etc.?
5. Describe the ventilation in the room.

References:

- (See Height and list of books on last page.)
- Gilbert, J. A. Researches upon School Children and College Students. University of Iowa Studies, I:1-39.
- Smedley, F. Report of Child Study Development. Chicago Board of Education, XLVI:(No. 2), 1-72.
- Whipple, G. Vital Capacity—Manual of Mental and Physical Tests. Warwick & York, Baltimore, 1910:70-74.

V. HEAD GIRTHS. VI. CEPHALIC INDEX.

There is no direct evidence that the size and the shape of skull are closely related to intelligence, but there are limitations beyond which the relationship is quite apparent. Extremes are found among mentally deficient children and are known as microcephalic, or very small skull, and macrocephalic, or very large skull, and hydrocephalic, or progressive development of the skull after normal growth. The circumference of the head is as a rule greater for boys than for girls.

The writer and his students have observed some heads as small as sixteen inches in circumference and others as large as twenty-six inches.

The average circumference of the heads of American boys and girls is about as follows: For boys at 6 years, $20\frac{1}{2}$ inches; for girls, $19\frac{4}{5}$ inches; for boys at 9 years $20\frac{3}{5}$ inches, for girls $20\frac{1}{5}$ inches; for boys at 12 years 21 inches, for girls $20\frac{4}{5}$ inches; for boys at 15 years $21\frac{3}{5}$ inches, for girls $21\frac{1}{5}$ inches; for boys at 18 years $22\frac{1}{5}$ inches, for girls $21\frac{3}{5}$ inches.

A. INDIVIDUAL OBSERVATION AND INSPECTION.

The cephalic index is the proportion of the greatest width (bi-parietal diameter) to the greatest length (antero-posterior diameter). If head calipers are not at hand rough measurements may be made by means of a ruler and tape. The indices for long heads (dolichocephalic) are below 78 per cent, and are found among English, Irish, Negroes, etc. The broad head (brachycephalic) has an index above 80 per cent, and is found among Germans, Russians, etc.

Measure with a tape the head at its greatest circumference, just above the eyes and ears.

1. List all measurements made and compare them with the norms that have just been given. (We recently found a very intelligent boy of 9 years with a head circumference of 20.75 inches and a cephalic index of 68.52 per cent.)

B. GENERAL OBSERVATIONS.

1. Observe for racial types of heads, and describe each as far as possible.

2. Observe for asymmetries and deformities of the head.

3. Sketch some different types of heads noticed.

References:

Baldwin, B. T. Craniometry, Monroe's Cyclopedia of Education, II.

Galton, F. Head Growth in Students at the University of Cambridge. *Nature*, XXXVIII:14.

Lee, A. Study of the Correlation of the Human Skull. *Sci., N. S.*, XII:946-49.

MacDonald, A. An Experimental Study of Children, etc. *Rep. U. S. Com. Ed.*, 1897-8:985-1204.

VII. ASYMMETRY OF BODY.

Most children and adults do not have symmetrical bodies.

Observe your children and see if you can find some whose bodies are symmetrical and others whose bodies are not symmetrical but asymmetrical. Do some have one shoulder lower than the other?

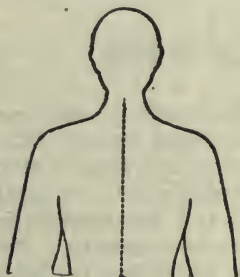


Fig. V. Normal Type.



Fig. VI. A Defective.

B. GENERAL OBSERVATIONS.

1. Observe carefully for marked examples in asymmetry of face, eyes, ears, shoulders, etc.
2. Which of these may be cured? How?
3. What are some possible causes due to school-room habits—improper lighting, posture, etc.?
4. What ones are due to sitting in desks too high or too low—asymmetrical shoulders, etc.?
5. Illustrate, by means of sketches, some prominent asymmetries noted.
6. Describe the physical characteristics of a defective child noted.

References:

(See Posture.)

VIII. POSTURE.

Good Position.



Improper Position.



Desk Too High.

Figs. VII, VIII, IX. (After Shaw and Berry.)

Posture is the result of habit and it is the teacher's function to correct habits of improper bodily posture and movement. Do the children stand correctly? Walk correctly? If not, how may these defects be corrected? There are two ways—vigilance on your part

and correct desks. If the desks are not adjustable and adapted to the age of the pupils do not let your principal or directors rest until they get such desks, and then do not fail to see that each pupil is in the proper desk and that each desk is readjusted at least twice each term.

It is very important that the teachers in the middle and upper grades of the schools pay more attention to the habits of posture for these are habits that the student may carry through their entire life, and they will be a great benefit or injury to the health and welfare of the child in general.

B. GENERAL OBSERVATIONS.

1. Note correct and incorrect carriage of head—erect, stooping, etc.
2. Note correct and incorrect position of shoulders—stooped, one lower than the other, etc. (There is frequently a correlation between posture and mental habits.)
3. Note general position while sitting, standing and walking—erect, graceful, etc.
4. What are some of the causes of incorrect posture—desks, fatigue, depressed mental attitude, etc.?
5. What are some characteristic bad positions—sitting on one foot, back in and abdomen prominent (lordosis), etc.?
6. How does a pupil's position differ when reading, writing or drawing at a desk?
6. Sketch a desk which will satisfactorily permit of the three positions noted in the preceding question. (Make the desk and chair adjustable in height, forward and backward, and the top of the desk adjustable for a flat surface of varying angles.)
7. Will such a desk ever take the place of vigilant supervision and drill?
8. What exercises are given to educate the pupils' bodies in right habits of posture—gymnastics, marching, etc.?
9. Make a diagram showing the number and distribution of the desks.

References:

- Krohn. Habitual Postures of School Children. *Child Study Monthly*, October, 1895.
- Lander-Brunton. On Posture and Its Indications. *Pop. Sci. Mo.*, XLII:26.
- McKenzie. Influence of School Life on the Curvature of the Spine. *Proc. N. E. A.*, 1898:939.
- Mosher. Habitual Postures of School Children. *Ed. Rev.*, IV:339.
- Mulliner, M. R. *The Educ. Bi-Monthly*, III, No. 3.

IX. TEETH.

It is estimated 85 to 95 per cent of school children have varying degrees of defective teeth. The temporary teeth are lost between the ages of six and twelve. There are no bicuspidis in the temporary set, and when they appear at the age of six or seven they are frequently mistaken for temporary teeth and extracted or neglected.

There are thirty-two permanent teeth and they are complete, aside from the third molars or "wisdom teeth," at the age of thirteen.

The following table gives the names and order of the permanent teeth:



PLATE I.

Type of Adenoid Children. From New York Child Welfare Exhibit.

1	2	2	1	2	2	1	2	2	1
<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
1	2	2	1	2	2	1	2	2	1
Wisdom	Molars	Bicuspsids	Cuspids	Incisors	Incisors	Cuspids	Bicuspsids	Molars	Wisdom

Table II. Number and Location of Permanent Teeth.

Decayed teeth are injurious to the pupil's health and detract much from the personal appearance. You may ask the child to open his mouth, note the number of decayed, protruding and irregular teeth, and if there is no medical inspector you should notify the principal or parent that attention to the child's teeth at this time will be very beneficial. Parents are usually glad to receive any information that will be of direct benefit to their children, and if teachers use common sense and politeness in notifying them of defects, these suggestions in nearly all cases will be gladly received.

A. INDIVIDUAL OBSERVATION AND INSPECTION.

1. Ask the child to open his mouth and note the number of teeth present.
2. How many teeth are decayed?
3. Are the teeth irregular, serrated or protruding, thus needing to be straightened?
4. Do the teeth receive proper attention daily—cleaning, etc.?
5. What are the effects of bad teeth—foul breath, insufficient mastication of food, infection of glands, etc.?
6. Observe for poor nutrition, pallor, open mouth, swollen gums, defective articulation.

B. GENERAL OBSERVATIONS.

1. Poor teeth generally indicate malnutrition and poor health. Do your observations verify this?
2. How do decayed teeth affect the health—centers for infection, interference with proper mastication of food, etc.?
3. What additional defects frequently accompany defective teeth—toothache, reflex earache, tuberculosis, etc.?
4. Why are such teeth so prevalent—cheap candies, neglect, poor health, etc.?
5. Mentally defective children seldom have good teeth. Do your observations agree with this?
6. What are some of the causes of irregular and protruding teeth—need of extraction, sucking fingers, etc.?
7. What may teachers do to remedy defects—notify parent or proper authority, advise pupil, etc.?

References:

- Burnham, W. H. The Hygiene of the Teeth. Ped. Sem., XIII:293-306.
 Johnson, G. E. The Condition of the Teeth of Children in Public Schools. Ped. Sem., VIII:45-58.

X. ENLARGED TONSILS. XI. ADENOIDS.

Hypertrophied tonsils are found not only to be the starting point for certain diseases, but sometimes direct conditions of mental defects. They are almost invariably associated with adenoids and the

best authorities claim that at least 5 to 10 per cent of American children have them. They frequently produce nervous troubles and may lead to inattention, lack of application, etc. No teacher should ever undertake to assume the rôle of physician in prescribing remedies or operations. Her function is to try to learn how to recognize defects and deformities and, providing these are not due to schoolroom habits which can be corrected, report them to the proper authorities for correction or treatment. In order to observe the enlarged tonsils, you ask the child to face the light, open his mouth, put out his tongue and say "ä." This will throw the back part of the tongue down in such a way that the throat is exposed. Try this with several children and you will soon learn to detect enlarged tonsils, which are large irregular glands on either side of the throat, sometimes almost closing it. Compare the throat with the sketches in your physiology books. Do not use a tongue depressor under any conditions unless you know it has just been sterilized.

The symptoms or signs of adenoids are not differentiated from hypertrophied tonsils. Adenoids grow in the vault of the pharynx up and behind the soft palate and vary greatly in size. (See sketches, natural size.) They are difficult to observe directly and can seldom be seen with the throat mirror or felt with the finger. Under no conditions should the teacher attempt either of these methods. For the common signs of adenoids see the questions and suggestions on the following page.

Naso-pharyngeal obstructions, due to adenoids, frequently affect hearing. Teachers should know the common symptoms and evil effects and have the physician consulted. The removal of adenoids is a minor operation in most instances, and should be done if recommended by a thoroughly competent physician or specialist.



Fig. X—A. Adenoids. T. Enlarged Tonsils.

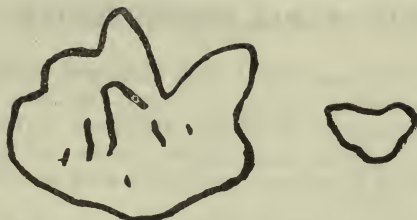


Fig. XI. Adenoids. (After Osler.)

A. INDIVIDUAL OBSERVATION AND INSPECTION FOR ENLARGED TONSILS.

1. Are there large irregular bunches of glands on either side of the throat, almost closing it? If so, the tonsils are enlarged. (Compare with sketch and allow for the age of the child, degree of exposure and other modifying influences.)
2. Is the uvula free from the tonsils?
3. Are the tonsils red, patched or crypted?
4. Observe carefully for chronic cases; acute cases, caused by colds, etc.

A. INDIVIDUAL OBSERVATIONS AND INSPECTION FOR ADENOIDS.

1. Does the child breathe through his mouth?
2. Are his tonsils enlarged?
3. Is the palate high and V shaped? The upper jaw narrowed?
4. Is there poor articulation? Can the child pronounce M and N correctly?
5. Does the voice lack resonance and have a dull nasal quality?
6. Is smell impaired?

B. GENERAL OBSERVATIONS.

Several of the questions asked under A. may be continued under this division of general observations. Compare doubtful cases with the children in the accompanying photographs who represent type cases.

1. Does the child have a dull, listless facial expression?
2. Is the mouth usually open and are the lips thick? Does the child have crooked teeth and an underdeveloped chin?
3. Is the nose large and are the orifices small?
4. Is there a defective thorax with stooped shoulders?
5. Is the hearing apparently affected?
6. Does the child lack vitality? Is it irritable? (An affirmative answer to the majority of these questions would indicate the presence of adenoids.)
7. Observe a child from whom adenoids have been removed. What are the noticeable results—revived vitality, brighter expression, etc.?

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XII. NASAL OBSTRUCTIONS.

These are, as a rule, associated with enlarged tonsils and adenoids, but there may be other causes. Defects of nose and throat are among the most numerous, if we except those of the teeth.

Ask the child to take a deep breath, press one finger against the side of the nostril and ask him to exhale with closed mouth.

A. INDIVIDUAL OBSERVATION AND INSPECTION.

1. Is the air passage closed, or nearly so?
2. Is it due to a temporary cold?
3. Are there indications of any foreign bodies present in the nose?
4. Are the bones enlarged?
5. Is the septum deflected?
6. Are there indications of chronic inflammation or adenoid growths?
7. Observe also for catarrhal obstructions or nasal discharges.

References:

(See Enlarged Tonsils and Adenoids.)

XIII. NUTRITION.

An average teacher will have very little difficulty in observing marked cases of poor nutrition among school children, for such children are usually under size, have a pale and sallow complexion and are very easily fatigued. Try to find out what these children eat for lunch. See whether they have regular hours of sleep and see that they get proper exercise and plenty of fresh air during the school period.

B. GENERAL OBSERVATIONS.

Observe for examples of malnutrition, children who are pale, sallow, undersized, very susceptible to disease, fretful, easily fatigued, etc.

Observe for anaemic children, or those of poor blood supply; try to ascertain the causes and effects.

Observe for rachitis, where there is insufficient amount of limes and phosphates in the bones. Note crooked legs, box-like head, stooped shoulders, curvature of the spine, pale skin, "rickety rosary" of ribs. This disease is found mostly among poorer children and is not generally considered hereditary.

1. Outline five questions showing there is a relation between school work and nutrition.
2. Observe some children in the lunch room. What do they eat?
3. What should a child eat for lunch?
4. What are the causes of malnutrition—lack of food, poor food, irregular hours of sleep, etc.?
5. Why should the teacher make a careful study of sex hygiene?

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XIV. NERVOUS DISORDERS, CHOREA, ETC.

See later Bulletin on Motor Expression.

XV. VISION.

The number of weak and defective eyes rapidly increases during school age. Eye strain is very prevalent with children, and it is believed such pupils are handicapped intellectually, but we have no conclusive evidence they are retarded. The defects increase with age.

All teachers should be able to observe the eyes intelligently, test the acuity of vision, note pronounced cases of astigmatism, squint, color blindness, and the lack of functioning of the grosser parts of the retina. The eyes should be examined annually by the teacher, also by an oculist in cases where probable defects exist.

In many of our best school systems teachers are required to be able to test the children's vision. You should be sure to see that at least the conditions in your schoolroom are the most favorable possible for the protection of the eyes. Never have the pupils face the light under any circumstances during their study period and not during their recitation period if it is possible to avoid it. The light should always come over the left shoulder if this can be arranged. Hold a pencil over a sheet of white paper on the top of each child's desk and see whether or not the shadows interfere with the child's seeing the letters as he writes them. If the desks face the wrong way, see the principal or directors and have them placed properly. This requires a little effort on your part, but it is of great importance to the child.

A. INDIVIDUAL OBSERVATION AND INSPECTION.

Observe the pupillary reflex by asking the child to look at a light window. Place the open hand over the open eye, then draw it rapidly away and note the rapid diminishing of the size of the pupil. If the reaction is slow or not noticeable the muscles may be impaired.

1. Observe the external appearance of the eye for inflammation, sores, discharges, etc.

2. If inflammation is present, try to ascertain whether it is due to cold or lack of cleanliness or eye strain.

3. Ask the child if his eyes are easily fatigued during study.

4. Ask the child if he has headaches.

5. Observe for blinking and spasmodic twitching of the lids.

6. Does the child have frequent styes? If so, it indicates eye strain.

7. Inspect membranous linings of the lids if suggestive of granular formations, enlargement of glands, and the presence of sticky secretions (trachoma).

Ask the child to look at a distant object. Note external or internal squint (strabismus). Cover one eye and then the other and note the effect. External squint is rare among children.



Normal.



Internal Squint.



External Squint.

ACUITY OF VISION.

As the eyes of children readily accommodate themselves to extreme conditions, it is almost impossible to detect defects in the acuity of vision without making special tests, which all teachers should be able to do. The best tests in common use are Snellen, Queen, MacCallie.

In the normal, or emmetropic, eye the rays of light are brought to a focus on the retina; in the far-sighted, or hypermetropic, eye the rays of light meet if continued behind the retina; in the near-sighted, or myopic, eye the rays of light meet before reaching the retina, since the eye is too long. The myopic eye is not fatigued easily; hyperopia is frequently accompanied by headaches.

A. INDIVIDUAL OBSERVATION AND INSPECTION.

Secure a standard test card for determining the acuity of vision. The following directions printed on the Snellen card are those formulated by Dr. Allport and are among the best. They are as follows:

Do not expose the card except when in use, as familiarity with its face leads children to learn the letters "by heart."

First grade children need not be examined.

The examination should be made privately and singly.

Children already wearing glasses should be tested with such glasses properly adjusted to the face.

Place the "Vision Chart for Schools" (Snellen) on the wall in a good light, do not allow the face of the card to be covered with glass.

The line marked XX (20) should be seen at twenty feet, therefore, place the pupil twenty feet from the card.

Each eye should be examined separately.

Hold a card over one eye while the other is being examined. Do not press upon the covered eye, as pressure might induce an incorrect examination.

Have the pupil begin at the top of the test card and read down as far as he can, first with one eye and then with the other.

If the child can read the majority of the letters with a line marked XX, the result should be recorded as 20/20. If he fails to read these and can read the majority of those above the result is recorded as 20/30, which means that this eye at twenty feet can see what the normal eye sees at thirty feet, and so on up the scale. Children who have one eye 20/30 or 20/40 may not know it.

1. Make careful records of the examinations in your note book.

B. GENERAL OBSERVATIONS.

Hyperopia is common among children before school age, but myopia is very prevalent during the school period.

1. Note signs of myopia, such as holding the book near the face, etc.
2. Can the child see the writing on the board?
3. What conditions tend to reduce myopia—proper lighting, seating, etc.?
4. Describe the movements made by children with imperfect vision—leaning forward, strained, facial expression, etc.
5. Should elementary text-books have large type? If not, why not?
6. What proportion of the children wear glasses?
7. Describe the lighting of the room. Make a diagram showing the number and location of the windows and black board.
8. Describe the kind of window shades in use.

OTHER DEFECTS.

A. INDIVIDUAL OBSERVATION AND INSPECTION.

Astigmatism. This may be tested with cards, but constant headaches and signs of eye strain on the part of the child are for the average teacher the most satisfactory indications. Astigmatism may be due to asymmetry of the cornea or of the lens. All eyes are slightly astigmatic and compound forms in connection with myopia and hyperopia are most common.

1. Test with cards included in the sets mentioned above.
2. Question for headaches, pain in eyes.
3. Are the eyelids inflamed? Is the head bent forward when reading? Is the vision for near and far objects indistinct? Does the child hold its head to one side when reading?

Asthenopia. Observe for possible signs where the eyes become easily fatigued for near and distant objects. Such a condition may be muscular or accommodative, and is closely related to hypermetropic eyes.

Color Blindness. Test with light green, purple and red. When picking shades and tints resembling green, what will the color blind person select? Give the results for the others. Use Holmgren's tests.

1. Is it easy to confuse color blindness and color ignorance?
2. Is color blindness more prevalent with girls or boys?
3. What may the teacher do to remedy defects?

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XVI. HEARING.

Satisfactory apparatus for testing the hearing of school children is expensive, but you may be able to detect any marked defects by asking the child to close his eyes and holding a watch at varying distances from each ear. The essential point is to see that the room is perfectly quiet and that after you have tested several children a standard or normal distance at which the tick can be heard be determined. Another simple method of testing hearing is to have children sit at certain distances from the teacher's desk while he is whispering words or asking certain questions in a whisper.

The whisper test is the most practical test for teachers, since eight or ten pupils may be tested at one time, and it is the only test that

uses conversational speech. The essential points for the teacher to keep in mind are: try to acquire a uniform whisper; see that every pupil is tested for different distances and compare the pupils with one another, since the results are always relative. The test may be used with any grade of pupils of different degrees of intelligence.

The whisper test is as follows: Place eight or ten children in a row with the first child ten feet from the examiner with one ear toward the examiner. Let the other children assume the same relative position. The examiner then whispers the numerals from one to twenty, or pronounces in a whisper twenty one-syllable words. After five words have been pronounced, or five numerals called, have each child move up one place, and the one at the head pass to the other end of the row. Each child should be provided with paper and pencil in order to record the words. After all have been tested four times for one ear, have each turn the other ear and repeat the experiment. If a child does not hear all the words when at the nearest distance, he should be tested again and referred to the medical examiner or to his local physician for treatment and further diagnosis. Try this test; it is not difficult, and, if it sounds too complex, try it with one child at a time.

The writer would, however, recommend that every city school system purchase a Seashore Audiometer, which is described in the *University of Iowa Studies in Psychology*, 1898, II: 158-163, and may be purchased from C. H. Stoelting Co., 121 N. Green St., Chicago; or a Pilling McCallie Audiometer, Pilling and Son, Phila.

A. INDIVIDUAL OBSERVATION AND INSPECTION.

It is claimed about 5 per cent of school children have imperfect hearing. Test the acuity of hearing with a watch. Outline necessary precautions. Why is the whisper test better? How may a "check" be devised? Why should the pupil's eyes be closed?

Question for earaches.

Give a simple dictation test and note errors, position of head, etc.

Inspect for types of ears. The ear plays an important part in the Bertillon system of identifying criminals.

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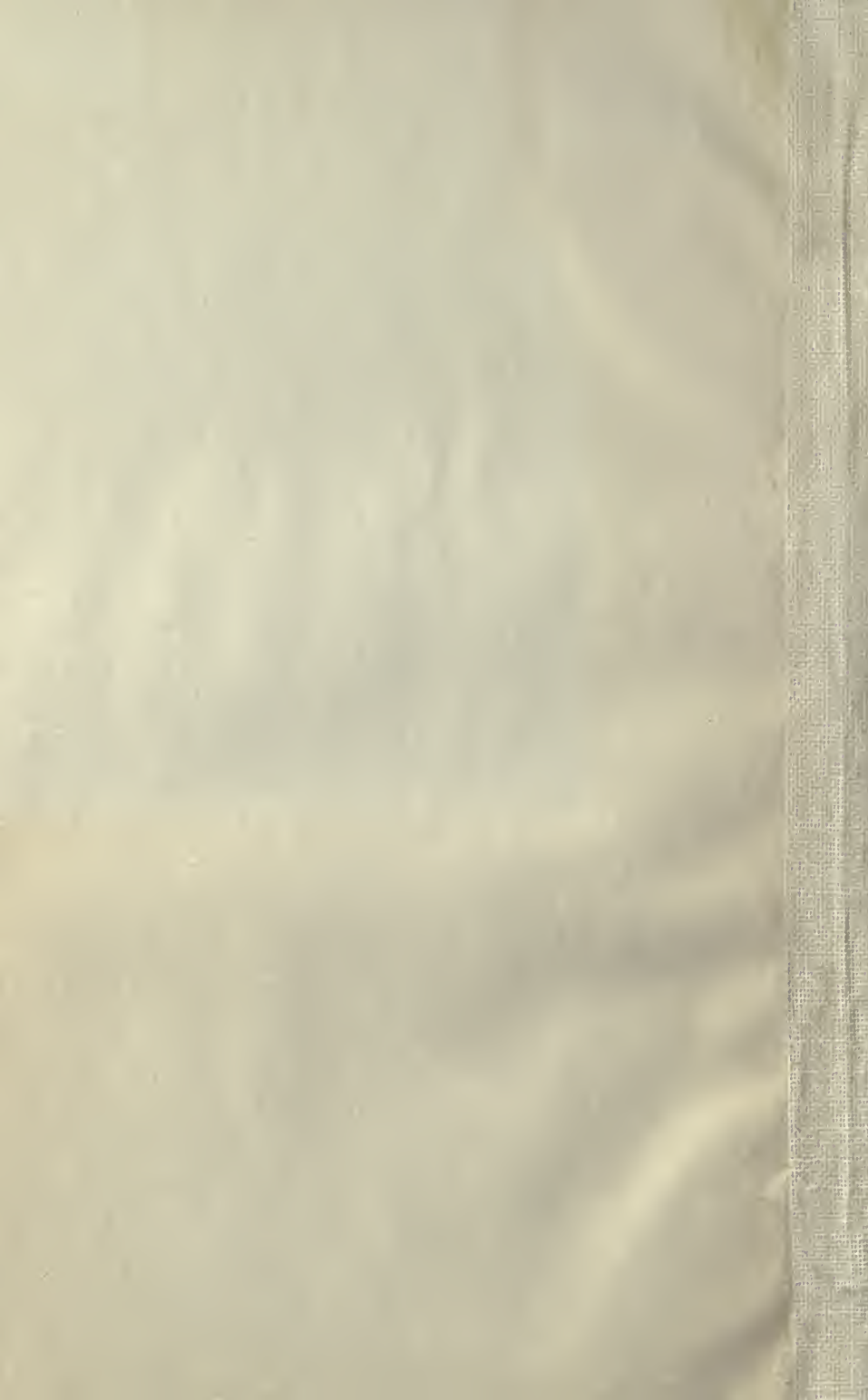
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